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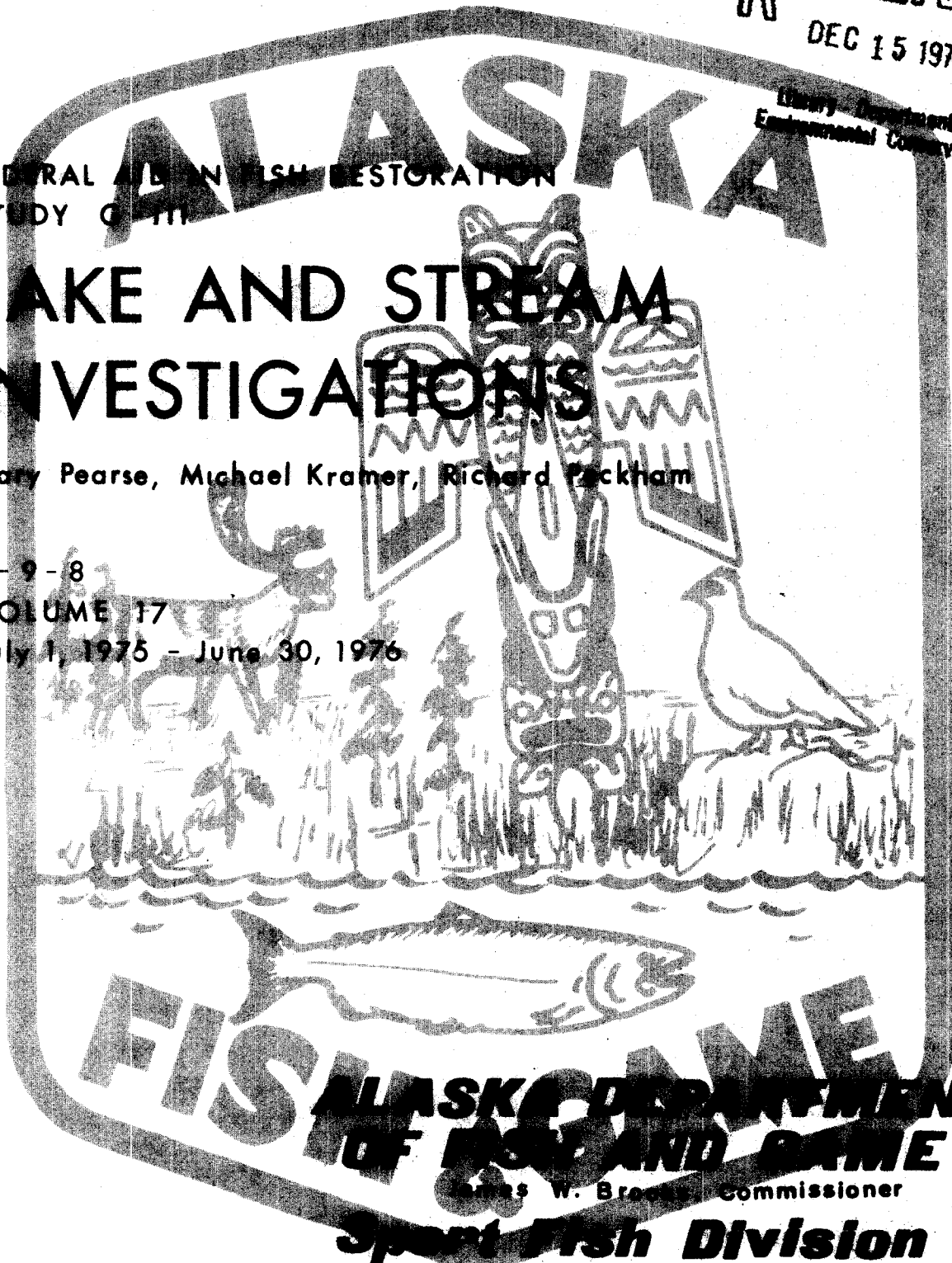
LAKE AND STREAM INVESTIGATIONS

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F-9-8

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STATE OF ALASKA

Jay S. Hammond, Governor



Annual Performance Report for

LAKE AND STREAM INVESTIGATIONS
INTERIOR ALASKA

by

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ALASKA DEPARTMENT OF FISH AND GAME

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RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
of Alaska

Project No.: G-9-8

Study No.: G-III Study Title: LAKE AND STREAM INVESTIGATIONS

Job No.: G-III-H Job Title: Evaluation of Interior Alaska
Waters and Sport Fish with
Emphasis on Managed Lakes
Fairbanks District.

Period Covered: July 1, 1975 to June 30, 1976

ABSTRACT

Dissolved oxygen readings were taken on 16 district lakes. Three lakes were sampled to evaluate species composition and growth. Thirty gravel pits were sounded for depths and test netted to determine presence or absence of fish. Eleven gravel pits and four lakes were stocked with either silver salmon, Oncorhynchus kisutch (Walbaum), or grayling, Thymallus arcticus (Pallas). Water chemistries were taken in conjunction with the U. S. Geological Survey on four area lakes.

RECOMMENDATIONS

1. Evaluate stocking success of Fairbanks District lakes stocked with rainbow trout, silver salmon, or grayling.
2. Continue creel census efforts on Birch Lake and other selected high use ares.
3. Conduct whitefish population estimates in selected segments of the Chatanika River.
4. Rehabilitate Little Harding and Engineer Hill lakes.
5. Conduct pre-rehabilitation studies on Blair Lake.

OBJECTIVES

1. To assess the environmental characteristics and fish species composition of the waters of the job area and where practical, obtain estimates of existing or potential angler use and sport fish harvest.
2. To evaluate application of fishery restoration and enhancement measures and determine availability of sport fish egg sources.
3. To assist as required in the investigation of public access status to the area's recreational fishery waters.

TECHNIQUES USED

Scales used for age determination were impressed on 20 mil acetate. A Bruning 200 microfiche reader was used to read the scales.

All fish were measured for fork length in millimeters.

Water samples for dissolved oxygen readings were collected using a Kemmerer water sampler and analysis was done with a Hach Model AL-36-WR kit. A Lowrance echo sounder was used to determine water depths.

Graduated mesh monofilament gill nets, 125' x 6' (38 x 1.8 m) with five mesh sizes ranging from 1/2" to 2 1/2" (12-64 mm) bar measure were used to sample fish populations in lakes.

FINDINGS

Dissolved Oxygen Testing

Sixteen Interior waters were tested for dissolved oxygen content during the reporting period (Table 1). Five lakes near the community of Central, Alaska were found to be anoxic and a newly surveyed lake, Roy Lake, near Central, had an oxygen content of 13 ppm in late March.

Fish Sampling in District Waters

Three lakes along the highway system were test netted to determine species composition and stocking success (Table 2). Silver salmon, Oncorhynchus kisutch, stocked in Harding Lake were captured in good numbers in test netting operations. Fifty-six silver salmon were caught in 72 hours of gill netting. Most of these fish were small however, and 45 out of 56 were less than 120 mm in length. Two lake trout, Salvelinus namaycush (Walbaum), were caught; one had an adipose clip and was assumed to be from a transplant of 235 adult lake trout made in 1965.

Table 1. Fairbanks District waters tested for dissolved oxygen, 1975.

Water	Date	Ice Depth	Water Depth	Snow Depth	Sample Depth	D.O. ppm
Otto Lake	Mar 3	36"	5.0'	0"	4'	0.6
Scout Lake (Eielson A.F.B.)	Mar 10	30"	17.0'	16"	5'	6.0
					10'	3.0
					15'	0.0
Bear Lake (Eielson A.F.B.)	Mar 10	36"	17.5'	12"	5'	4.0
					15'	0.4
Rainbow Lake (Eielson A.F.B.)	Mar 10	36"	14.5'	6"	5'	4.0
					10'	1.8
Engineer Hill Lake	Mar 11	36"	9.0'	8"	5'	4.0
					8'	2.2
36.5 Mile Pit (Steese Hwy)	Mar 13	36"	14.0'	14"	5'	7.6
					10'	6.0
Koole Lake	Mar 14	30"	8.0'	6"	5'	5.5
Johnson Road Pit #2	Mar 19	30"	20.0'	16"	5'	1.0
					10'	1.0
31 Mile Pit	Mar 19	36"	15.0'	12"	5'	1.5
					10'	1.5
17 Mile Lake 65° 42' 30" x 144° 23' (Central, Ak)	Mar 21	36"	6.0'	14"	5'	0.0
Roy Lake 65° 35' 20" x 145° 02' (Central, Ak)	Mar 21	36"	6.0'	12"	5'	13.0
17 Mile Slough (Central Ak)	Mar 21	36"	7.0'	14"	5'	0.0
Tom Kennedy Lake 65° 35' 20" x 144° 45' (Central, Ak)	Mar 22	36"	16.0'	12"	7'	0.0
					5'	0.0
					10'	0.0

Table 1. (cont.) Fairbanks District waters tested for dissolved oxygen, 1975.

Water	Date	Ice Depth	Water Depth	Snow Depth	Sample Depth	D.O. ppm
Ed Lake 65° 35' 45" x 144° 46' (Central Ak)	Mar 22	36"	11.0'	15"	5'	0.0
Fox Lake 65° 36' 30" x 144° 45' (Central, Ak)	Mar 22	36"	17.0'	14"	5'	0.0
Nenana Pond	Apr 9	36"	17.0'	16"	5'	7.0
					10'	6.0

Table 2. Fish sampling summaries, 1975.

Name	Date	Species*	No.	Length (mm)		Freq.**
				Range	Mean	
Birch L.	June 13	SS	30	100-275	215.7	1.07
		RT	15	105-490	373.3	0.25
		LC	120	4.28
L. Harding L.	Sept 18	SS	9	185-470	231.0	0.38
		NP	8	0.33
Harding L.	Oct 2	SS	56	100-370	143.8	0.78
		NP	11	365-585	497.7	0.15
		LT	2	537-722	629.5	0.03

* SS - silver salmon
 RT - rainbow trout
 LC - lake chub
 NP - northern pike, Esox lucius Linnaeus
 LT - lake trout

** Freq. - Frequency is the number of fish per net hour

Birch Lake produced eight Age I silver salmon ranging in length from 100 to 135 mm with a mean of 117.5 mm and 22 Age II silver salmon ranging in length from 245 to 275 mm with a mean of 251 mm. Fifteen rainbow trout, Salmo gairdneri Richardson, were captured in Birch Lake and ranged from Age I to Age IV. One hundred and twenty lake chubs, Couesius plumbeus (Agassiz), were also caught during the netting operation.

Little Harding Lake yielded nine silver salmon in an overnight gill net set. The largest was 470 mm and weighed 1,362 gms. This fish was in its terminal year (Age IV).

Thirty gravel pits along the highway system were test netted for species composition and sounded for depths (Table 3). Seven of these pits had no fish. Midwinter dissolved oxygen samples will be taken from these pits in the future to determine their suitability for sport fishing.

Lake Stocking

Eleven gravel pits and four lakes were stocked in the Fairbanks District during 1975 (Table 4). Silver salmon were stocked for the first time in Roy Lake near Central, Alaska, after test netting determined the lake to be barren of fish.

Water Chemistry

Extensive water chemistry analyses were made on four Fairbanks District lakes during the summer of 1975 in conjunction with the United States Geologic Survey. Complete results are on file in the Fairbanks office. Selected parameters are presented in Table 5.

Population Estimate

An annual population estimate of whitefish in selected areas of the Chatanika River was attempted in late August but was unsuccessful due to heavy rains and decreased visibility making visual counts impossible. It has been found (Kramer, 1974) that visual counts of whitefish in this river closely correlate with Schnabel tag and recapture estimates. Past estimates have ranged between 19,000 to 29,100.

Creel Census

Due to high and muddy waters during the whitefish spearing season, with a resulting decrease in spear fishing, only spot checks were taken at the Chatanika River. Although on several nights up to six anglers were observed having excellent success, this was not the case for the majority of nights due to inclement weather and muddy water.

Table 3. Fish sampling and depth sounding summary; highway gravel pits, 1975.

Location	Date	Species* Net Results	Max. Depth (ft)	Temp (°F)
<u>Richardson Highway</u>				
Mile:				
357.6 (Weigh Station Pit #1)	June 16	4 S, 7 LC	30	62
357.6 (Weigh Station Pit #2)	June 16	2 LC, 1 GR	33	62
357.6 Old Rich Hwy Pit (1/4 mi. behind Weigh Station)	June 16	No fish	18	65
347.1 (two, one on each side of hwy.; private	June 16			
345.8 (private)	June 16			
343.6 (Bathing Beauty Pit)	June 18	4 LC	25	61
<u>Eielson AFB</u>				
Mile:				
338.9	June 18		<4	
338.7	June 18	11 LC	19	65
338.4	June 18		<9	
337.5 (Tar Kettle L.)	June 18	No fish	25	62
#1	June 18		4	
#2-Hidden	June 18	No fish	18	63
#3-Pike	June 18	9 NP	22	64
#4-Rainbow	June 18	9 HWF, 3 NP, 1 S	22	63
#5-Scout	June 18	29 S, 9 NP	25	64
#6-Grayling	June 18	1 HWF	15	62

Table 3. (cont.) Fish sampling and depth sounding summary; highway gravel pits, 1975.

Location	Date	Species* Net Results	Max. Depth (ft)	Temp (°F)
<u>Steese Highway</u>				
Mile:				
29.6	July 17	3 RWF	12	
30.6	July 17	No fish	12	64
31.6	July 17	1 GR, 3 RWF	10	64
33	July 17	1 HWF	14	67
33.5	July 17	7 GR	10	65
34.6	June 20	No fish	15	64
35.8	June 20	No fish	15	64
36.5	June 20	No fish	15	62
38.3	June 20		6	
38.5	June 20		5	
39.5	June 20		6	
40	June 20		5	64
40.8	June 20	5 GR, 5 SSC	9	62
43.2 (private; posted)				

- * S -sucker, Catostomus catostomus (Forster)
 GR -grayling, Thymallus arcticus
 NP -northern pike
 HWF-humpback whitefish, Coregonus pidschian (Gmelin)
 RWF-round whitefish, Prosopium cylindraceum (Pallas)
 SSC-slimy sculpin, Cottus cognatus Richardson
 LC -lake chub

Table 4. Lake stocking, Fairbanks District, 1975.

Lake	Location	Date	Species*	Size	Number
Birch Lake Pit	Richardson Hwy	June 30	GR	fry	25,000
31 Mile Pit	Mile 332 Richardson Hwy	June 26	GR	fry	10,000
		June 27	GR	fry	25,000
Johnson Road Pit #2	Johnson Road	June 26	GR	fry	10,000
		June 27	GR	fry	25,000
Tar Kettle Lake	Eielson A.F.B.	June 26	GR	fry	10,000
		June 27	GR	fry	25,000
Grayling Lake	Eielson A.F.B.	June 26	GR	fry	10,000
		June 27	GR	fry	25,000
Hidden Lake	Eielson A.F.B.	June 26	GR	fry	10,000
		June 27	GR	fry	25,000
Bathing Beauty Pond	Mile 343.6 Richardson Hwy	June 27	GR	fry	25,000
Otto Lake	Healy	June 27	GR	fry	75,000
Borrow Pit	30.6 Mile Steese Hwy	June 27	GR	fry	5,000
Borrow Bit	34.6 Mile Steese Hwy	June 27	GR	fry	10,000
Borrow Pit	35.8 Mile Steese Hwy	June 27	GR	fry	10,000

Table 4. (cont.) Lake stocking, Fairbanks District, 1975.

Lake	Location	Date	Species*	Size	Number
Harding Lake	Richardson Hwy	May 28-June 2	SS	14/1b	2,301
		July 8	SS	454/1b	100,100
		July 17	SS	369/1b	50,000
		July 22	SS	304/1b	71,000
		July 22	SS	459/1b	93,498
		July 31	SS	251/1b	58,500
Nenana Pond	Nenana	July 17	SS	369/1b	5,000
Roy Lake	Central	July 17	SS	369/1b	10,000
Birch Lake	Richardson Hwy	May 28-June 2	SS	26/1b	5,907
		July 17	SS	369/1b	95,000

*SS - silver salmon

GR - grayling

Table 5. Water chemistries taken in the Fairbanks District in conjunction with U.S.G.S., 1975.

Lake	pH	<u>Total Alkalinity</u> ppm	<u>Total Hardness</u> ppm
Lost Lake	7.1	31	37
Harding Lake	ND	30	27
Little Harding Lake	6.7	36	38
Birch Lake	7.0	52	55

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